

IN THE BEGINNING

DEVELOPMENT AND OPERATIONS WERE FUNCTIONAL SILOS

Let there be DevOps

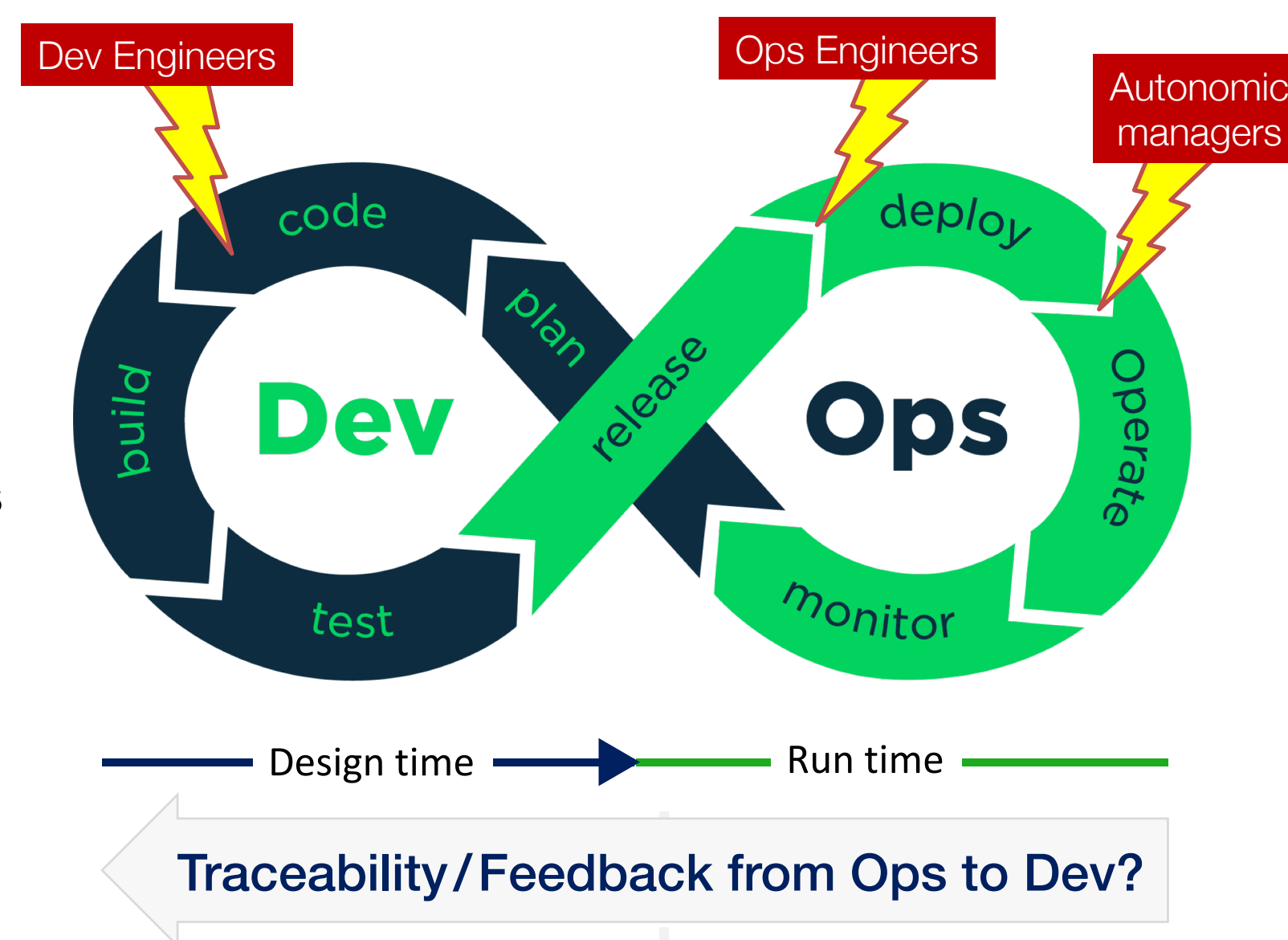
Integration
Measurement
Culture
Quality
Communication
Automation
Tools
Delivery
Improvement

The Motivation

Continuous Software Engineering

State of the Practice

- Developers and IT operators work on different environments/artefacts
- Continuous feedback lacks automation to impact software design
- Industry is moving towards eliminating the Ops role, while assigning more responsibilities to developers
- App code != deployment code. The latter is tested by deploying the app



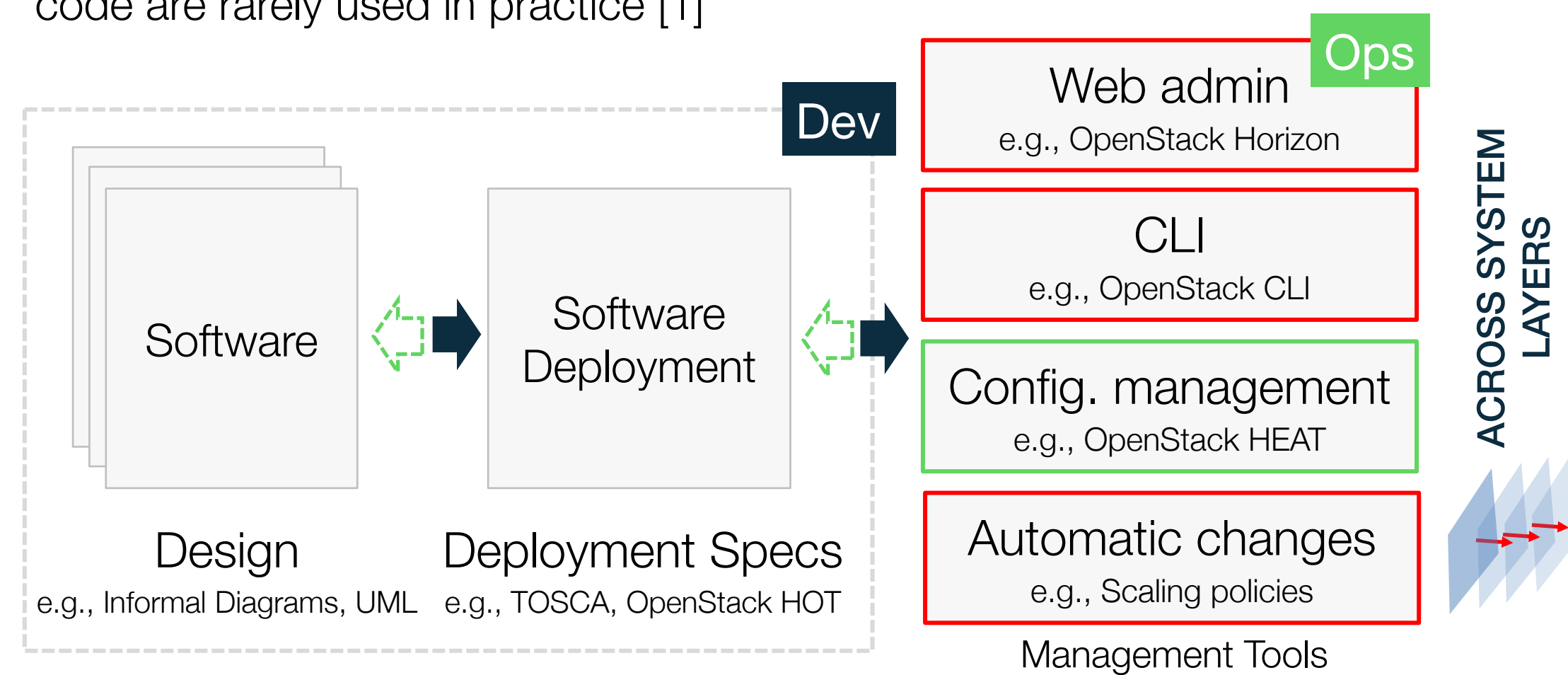
What's missing?

- How can we streamline continuous feedback to support the continuous development cycle?
- How can we enable autonomic capabilities to provide feedback from run time to design time?
- What kind of automation is needed to facilitate continuous experimentation and architecting?
- How can we assure quality for deployment code beyond static analysis, w/o deploying the system?

The Problem

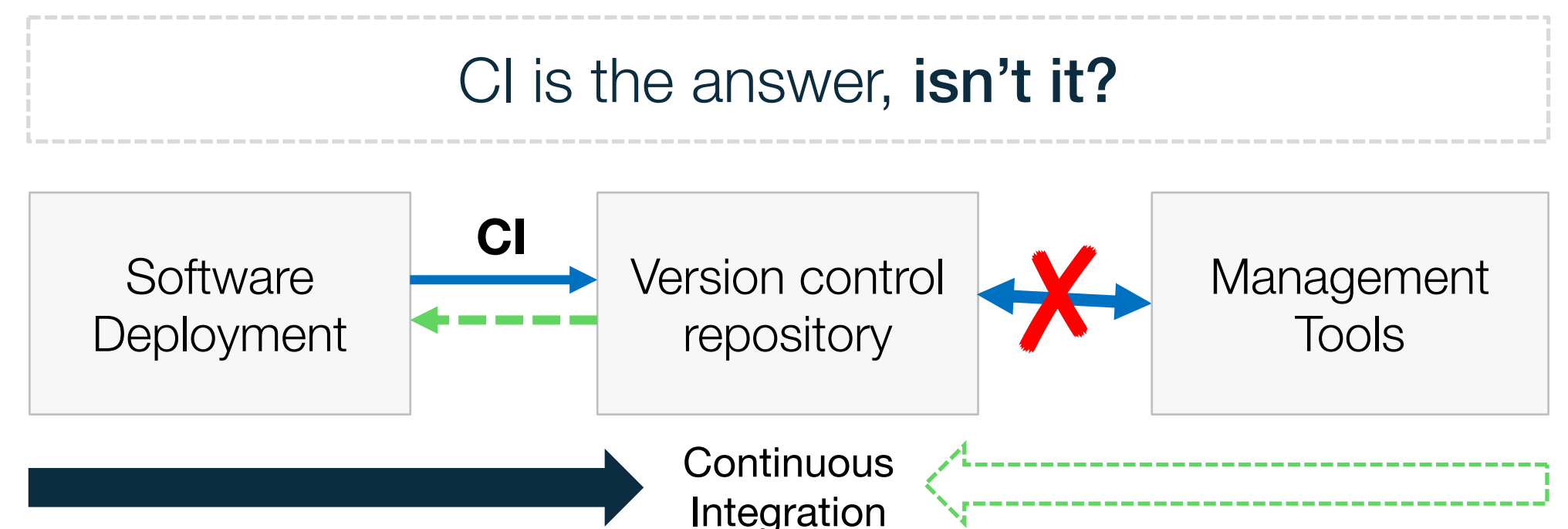
Bidirectional Traceability

Systematic approaches to maintain the correspondence between design and code are rarely used in practice [1]



Continuous Integration (CI)

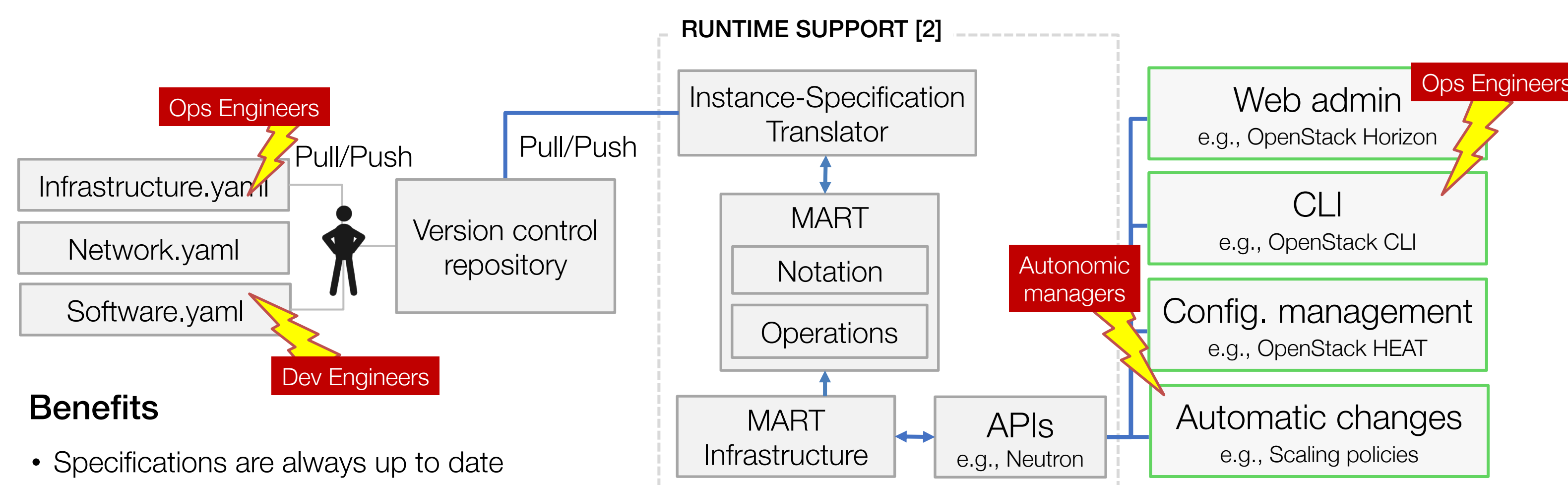
- Where are all these changes logged?
- How can they be traced back to their source?
- How and when are stakeholders notified about them?



The Solution

Round-Trip Engineering One Platform To Rule Them All

The infrastructure becomes a proxy to commit runtime actions



Benefits

- Specifications are always up to date
- Runtime data is fed back to development
- This framework enables further sync:
 - Design Deployment specs Running system
 - Runtime metrics → continuous experimentation specs

Considerations

CONTRIBUTION MODEL Committer vs Contributor

- No update delay
- Less merge conflicts
- Unsupervised changes
- Update delay
- Time reviewing changes
- Frequent merge conflicts

CONFLICT RESOLUTION Reliable vs Best effort

- Less prioritized changes are discarded
- Try to merge non-conflicting changes

CI PRINCIPLES QA, build, deployment

- Automate the build?
- QA is open challenge
- Make the build self-testing?
- Automate deployment?